SCHOOL OF ENGINEERING & COMPUTER SCIENCE

ANNUAL REPORT 2015
With the recent success in athletics and the addition of multiple state-of-the-art facilities on campus, I’m sure you’ve heard that it’s a great time to be a Baylor Bear. What you might not know is that it’s also a great time to be a Baylor engineering and computer science student.

This year marks the School of Engineering & Computer Science’s 20th anniversary. From its meager beginnings in the 70’s as a small program in the College of Arts & Sciences, we have expanded to one of the most sought-after undergraduate majors on campus.

With total enrollment approaching 1,200 undergraduate students, our engineering and computer science programs are graduating more engineers and computer scientists per year than the first 10 years combined. Alumni from our engineering and computer science programs fill industry positions at companies that range from Nike to SpaceX.

This year, our annual giving was up nearly 60 percent from last year and it has more than doubled over the past five years. Our young alumni provide additional scholarship opportunities that help us recruit some of the best and brightest high school students to ECS.

With an average SAT/ACT score of 1298/29, the 400 new freshmen we welcomed in August 2014 will have access to more study abroad, technical design, mission, entrepreneurship, and leadership opportunities through student-led organizations than any class before.

We are committed to providing our students with a sound engineering and computer science education and the skills needed to compete in a global marketplace. With the addition of six new faculty members who bring a wide range of research expertise and five new staff members, our programs are ready to meet the rapid growth and standard of academic excellence our corporate partners and recruiters have come to expect from the School.

This year, our seniors will be recruited by nearly 150 companies across the United States. Many of our recent graduates had multiple job offers from companies like ExxonMobil, Chevron Phillips Chemical Company, Phillips 66, Google, IBM, L-3, and Lockheed Martin.

I hope you enjoy reading our 2014-2015 Annual Report. Inside you’ll discover some of the highlights and contributions of our faculty, students, and alumni that, no doubt, make it a great time to be a Baylor engineer and computer scientist.
Members of the Board of Advocates voluntarily assist the School in executing its mission.

2014 – 2015 Members

Bill Mearse, President of the Board of Advocates
Houston, Texas

2015 – 2016 New Members

Stephen W. Smith
Vice President and Chief Technical Officer
Trinity Industries, Inc.
Dallas, Texas

Andy Spence
President
Engedi Group
Austin, Texas

Gary St. Denis
President
Tell/Vince
Houston, Texas

Dean O. Snider
Independent International Management Consultant
Dallas, Texas

Rick Talles, PE
President
Capstone Mechanical
Waco, Texas

Tara Vogt
CEO
JetPay, LLC
Dallas, Texas

Jim D. Wiethorn, P.E.
Chairman of the Board, Principal Engineer
HAAG Engineering, Co.
Houston, Texas

2015 – 2016 New Members

David Morgan
Vice PresidentPolyethylene
Chevron Phillips Chemical Company, LP
Houston, Texas

Brad Blankemeyer
SAP Programming Services
Chevron Phillips Chemical Company, LP
Houston, Texas

Bryan Bammel
North America Supervisor
ExxonMobil Corporation
Houston, Texas

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# 2015–2016 Faculty

## Department of Computer Science

- Dr. Greg Speegle Professor and Department Chair
- Dr. Eunhee Song Professor
- Dr. David Lin Associate Professor
- Dr. Greg Hamerly Professor
- Dr. Paul Grabow Senior Lecturer
- Dr. Matthew Fendt Professor
- Dr. Jeff Donahoo Associate Professor
- Dr. Y oung-Rae Cho Senior Lecturer
- Dr. Bill Booth Associate Professor
- Dr. Erich Baker Senior Lecturer
- Mr. Michael Aars Senior Lecturer
- Mr. Matthew Aars Professor and Department Chair

## Department of Electrical and Computer Engineering

- Dr. Keoung Y. Lee Professor and Department Chair
- Dr. Charles Baylin Associate Professor
- Dr. Enrique Blair Assistant Professor
- Dr. Liang Dong Associate Professor
- Dr. M. Mack Grady Professor
- Dr. Ian Gravagne Associate Professor
- Dr. Jonathan Hui Assistant Professor
- Dr. Randall Jeon Professor and Graduate Program Director
- Dr. Scott Koziol Assistant Professor
- Dr. Yang Li Assistant Professor
- Dr. Robert J. Marks Distinguished Professor
- Mr. John Miller Senior Lecturer
- Dr. Linda J. Olson Associate Professor
- Dr. Keith Eason Schubert Associate Professor
- Mr. Brian Thomas Senior Lecturer
- Dr. Mike Thompson Professor and Associate Dean for Undergraduate Programs
- Dr. Bill Poucher Assistant Professor
- Dr. G. Michael Poor Associate Professor
- Dr. Pete Maurer Associate Professor
- Dr. Richard W. Campbell Senior Lecturer and Assistant Chair
- Dr. Brian Garner Assistant Professor
- Mr. Stanmeier Greene Lecturer
- Dr. David Jack Assistant Professor
- Dr. Benjamin S. Kelley Professor
- Dr. Jill Klenzerman Lecturer
- Dr. Joseph Kurth Assistant Professor
- Mr. Patrick Lea Associate Professor
- Mr. Byron Newberry Associate Professor
- Dr. Stephen T. McClain Assistant Professor
- Dr. Sungken Lee Assistant Professor
- Dr. Byron Newbery Professor
- Dr. Jonathan Ryan-Länder Assistant Professor
- Dr. Carolyn Minda Assistant Professor
- Dr. Douglas E. Smith Lecturer
- Dr. Kenneth Van Tienen Professor and Associate Dean of Research and Faculty Development
- Dr. Lesley Wright Assistant Professor

## Department of Mechanical Engineering

- Dr. William Jermias Professor and Department Chair
- Ms. Richard W. Campbell Senior Lecturer and Assistant Chair
- Mr. Stanmeier Greene Lecturer
- Dr. David Jack Assistant Professor
- Dr. Benjamin S. Kelley Professor
- Dr. Jill Klenzerman Lecturer
- Dr. Joseph Kurth Assistant Professor
- Mr. Patrick Lea Associate Professor
- Dr. Stephen T. McClain Assistant Professor
- Dr. Sungken Lee Assistant Professor
- Dr. Byron Newbery Professor
- Dr. Jonathan Ryan-Länder Assistant Professor
- Dr. Carolyn Minda Assistant Professor
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## General School Information

### 2014–2015

- **Total Enrollment**: 1,184
- **Graduate**: 67
- **Undergraduate**: 1,117
- **Mechanical Engineering**: 294
- **Average Class Size**: 23
- **Average Lab Size**: 17
- **Female Population**: 23%
- **Undergraduate Degrees Granted**: 144
- **Freshman Class Snapshot**: 1298
- **Average ACT**: 29
- **Average SAT**: 1025
- **Incoming Freshmen**: 400 (Fall 2014)

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### 2014–2015 Faculty and General School Data

#### Computer Science

- **Professor**: 15
- **Senior Lecturer**: 2
- **Assistant Professor**: 4
- **Associate Professor**: 2

#### Electrical and Computer Engineering

- **Professor**: 16
- **Senior Lecturer**: 3
- **Assistant Professor**: 1
- **Associate Professor**: 5

#### Mechanical Engineering

- **Professor**: 16
- **Senior Lecturer**: 1
- **Assistant Professor**: 2
- **Associate Professor**: 5

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ECS Faculty Statistics 2014–2015, with Breakdown by Faculty Title
Beyond the Numbers

We would be remiss to produce an annual report that only lists the financial performance and programmatic statistics of our School without looking at the true measure of our success: our students. Year after year, our faculty educates men and women of a higher caliber and academic prowess than the year before. This year is no different.

Matt Tinsley
Senior, Computer Science

Matt is a student who inherently enjoys building things and creating something new. Prior to his first day on campus, he completed the Baylor University Minecraft Megabuild that went viral on Baylor’s social media channels and instantly upped the “cool factor” for the Department of Computer Science.

Whether leading as the president of Upsilon Pi Epsilon (Computer Science Honor Society), serving as a community leader in Teal Residential College, or organizing student hackathons, Matt’s technical aptitude is only outshone by his natural ability to lead and motivate others.

“I am passionate about the college experience and wanted to be part of the college experience for new students,” said Matt. “For years, I wanted to get my Ph.D. in Computer Science and teach, but eventually I decided I’d rather spend some time getting my hands dirty and learning at an industry pace.”

With a 3.96 GPA and experience researching solar optimization and drone artificial intelligence alongside our faculty, Matt will have no problem keeping up with today’s rapidly-changing tech industry.

“I’d like to end up in a role where I get to provide direction and vision for a team as a project lead or architect,” he said. “I owe so much to key mentors and friends in my life. On top of that, I just enjoy being around people and learning about them.”

After graduation, Matt hopes to work for a company that fosters a creative and entrepreneurial work environment.

SHELBY BOOTH
Senior, Mechanical Engineering

Prior to the start of her freshman year, Shelby was asked to take the StrengthsFinder 2.0 assessment. Her top five strengths include achiever, competition, focus, futuristic, and significance. With strengths like these, it’s no wonder that she is not only one of our best and brightest students, but also one that we’ll be keeping an eye on long after graduation.

“I believe that if you set your mind to a particular goal, you can achieve anything you want,” said Shelby. “People should never let anyone tell them they can or can’t do something. If you enjoy a specific job or activity, you should go for it and not let any other factors stop you.”

This attitude has undoubtedly helped Shelby as she managed to juggle various campus leadership roles and extracurricular activities that range from vice president of Pi Tau Sigma (International Mechanical Engineering Honor Society) to participation in Baylor’s beloved All University Sing competition, all while staying on the Dean’s list in one of the most challenging programs on campus.

As Shelby enters her fourth and final year at Baylor, she has already set her sights on post-graduation plans.

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“Eventually, I hope to start an engineering firm with a few people who have similar values and goals. Then, apply the resources from this firm to help bring basic mechanical amenities to third world countries.”

True to form, Shelby’s plans for the future are already inspiring her fellow classmates and faculty to follow their dreams and leave a lasting impact on the world around them.
DOUGLAS INGRAM
Senior, Electrical and Computer Engineering

As the undergraduate research assistant for Dean O’Neal and an intern at Sandia National Laboratories, Douglas possesses the curiosity, initiative, and perseverance needed to thrive as an innovative engineer in today’s workforce. “I feel like innovation is one of the core principals in engineering,” said Douglas. “Despite an engineer’s planning in the initial design phase, there is always room to improve. Analyzing the positives and negatives and trying to build upon what currently exists has always been something I’ve been interested in.”

As the Dean’s research assistant, Douglas evaluated existing fan models against fan motor combination data that was acquired from manufacturers. Through this, a new model was developed to efficiently model small horsepower fan motor combinations. At Sandia, Douglas worked on the Mobile Instrumentation Unit which assists in acquiring data for large-scale rocket sled tests and free fall drop tests. “I’m always trying to answer the question, ‘How can I make it better?’ Through innovation, we achieve progress. That has been one of my favorite things to learn about so far.”

While Douglas has spent quite a bit of his time in the lab, he also finds time to participate in Baylor’s Institute of Electrical and Electronics Engineers (IEEE), and holds leadership positions in both Eta Kappa Nu (Electrical and Computer Engineering Honor Society), and Theta Tau (Professional Engineering Fraternity). He is also a leader in Sigma Chi Fraternity and indulges his personal hobbies of shooting and editing short videos and playing soccer.

After graduation, Douglas hopes to work his way up into a management position at an engineering firm.

MOLLY HAYES
Senior, Engineering (Biomedical)

Molly Hayes’ desire to make a difference in this world coupled with her passion for working with people with special needs led to her career aspirations in biomedical engineering. Her volunteer activities with Friends for Life, Baylor Special Olympics Volunteer Group (past president), and Chi Omega sorority (service chair) fuel her passion to help others. “I want to make a difference by using my biomedical engineering degree to improve the quality of life for people who need it the most,” said Molly. An internship at HMS provided Molly with valuable insight into how the healthcare and insurance industries work together to prevent fraudulent practices and abuses of the healthcare system. While interning at Allosource, a bone and tissue bank, Molly learned firsthand how the painful process of losing a loved one can be turned into a precious gift for another person. In addition, she worked in the laboratory and with doctors to learn about the transplant procedures that provide a new lease on life for thousands of people.

These real-world experiences have prepared Molly for a future career where she hopes to help people live better, healthier lives. After graduation, Molly hopes to work for a company where she can create, sell, or research medical devices.

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AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

Members of the Baylor Student Section of the American Society of Mechanical Engineers are open to all students who are student members of the American Society of Mechanical Engineers. The purposes of this section are: 1) to acquaint members with the goals and programs of ASME and to encourage participation in the activities, and 2) to sponsor and promote activities which will enhance the educational experience of members.

ASSOCIATION FOR BIOFORMATICS AND BIOTECHNOLOGY (ABB)

Association for Bioinformatics and Biotechnology is a student organization dedicated to helping build and foster common interests in Bioinformatics with those in the major and like-minded students. ABB provides members with: 1) a better understanding of Bioinformatics, 2) a network with other students, professors, and professionals in the field, 3) gain hands-on experience with design and construction building activities, and 4) exposure to current and future bioinformatics research. Through stimulating talks, faculty research and graduate school projects, field trips, and meetings, the student section fosters the professional growth of its members. Its goal is the mutual benefit of its members. Its goal is the mutual benefit of its members.

BAYLOR THEME PARK ENGINEERING & DESIGN (BTPED)

BTPED is a brand new undergraduate student organization open to all majors and those interested specifically in theme parks. The purpose of this organization is: 1) to develop creative thinking, teamwork, communication, and friendships while representing Baylor in the Walt Disney Imaginations competition; and in the theme park and entertainment industry; 2) create professional, educational, and networking opportunities for students through exposure to the industry and participation in experiences: building activities, and 3) expose members to resources furthering their knowledge concerning engineering and design. The major goals of BTPED are: uniting Baylor undergraduates, encouraging creativity, problem solving and cooperation between majors, as well as building the Walt Disney Imaginations competition.

BAYLOR UNDERGRADUATE RESEARCH IN SCIENCE & TECHNOLOGY (BURLAST)

BURLAST is an undergraduate student organization focusing on providing information and opportunities to enhance their undergraduate research experience, hosting lectures to educate students about the principles of research, and increasing the importance of undergraduate research for those involved in science, technology, engineering, and math.

BAYLOR BUV (BAYLOR UNIVERSITY) Engineers

Baylor BUV is a student organization that plans to get involved with local robotics competitions in the Waco community. The organization will also serve to network faculty and students who are passionate about areas of robotics.

REAR BOTS

Bear Bots is a student organization that plans to get involved with local robotics competitions in the Waco community. The purpose of Bear Bots is to develop and maintain a high standard of professional interest among its members, and to unite them in a strong bond of fraternal fellowship. Activities carried out by Bear Bots include hosting professional industry speaker talks, faculty research and graduate school talks, social events for members, community service projects, providing tours around the engineering school for incoming freshmen, and any activity the fraternity feels will best serve Baylor BUV and its members. The national purpose of BEAR BOTS is to unite engineering and computer science students.

BETA THETA TAU

Beta Theta Tau is the oldest, largest, and formal Fraternity for Engineers. Since its founding at the University of Minnesota in 1904, over 50,000 have been initiated through the years. With emphasis on quality and a strong fraternal bond, the Fraternity has chapters only at ABET-accredited schools and limits the number of student members to any one of its chapters across the nation. The purpose of Beta Tau is to develop and maintain a high standard of professional interest among its members, and to unite them in a strong bond of fraternal fellowship. Activities carried out by Beta ThetaTau include hosting professional industry speaker talks, faculty research and graduate school talks, social events for members, community service projects, providing tours around the engineering school for incoming freshmen, and any activity the fraternity feels will best serve Baylor BUV and its members. The national purpose of BEAR BOTS is to unite engineering and computer science students.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

The Baylor University Student Branch of the IEEE is affiliated with the Institute of Electrical and Electronics Engineers, Inc. (IEEE), an international organization which is the world’s largest technical professional society. Through projects, field trips, and meetings, the student branch fosters the professional growth of its members and promotes a closer relationship among students, faculty, and the engineering community. Baylor Student Branch membership is open to any student member of IEEE. Student membership in IEEE is open to students studying engineering, computer science, or a related field.

ETA KAPPA NU

Eta Kappa Nu is an International Electrical and Computer Engineering Honor Society of the IEEE.

NATIONAL SOCIETY OF BLACK ENGINEERS (NSBE)

Baylor University Charter of the National Society of Black Engineers (NSBE) is available to all students majoring in engineering, science, or applied mathematics. The NSBE mission statement is “to increase the number of culturally responsible Black engineers who excel academically, succeed professionally and positively impact the community.” The objective of the Chapter is to encourage the professional career development of African-American and other ethnic minorities in engineering and other science/engineering-related fields at Baylor University. Furthermore, the Chapter strives to promote fellowship among minority students in order to increase the number of minority students entering and graduating with a degree in engineering or other related fields.

SOCIETY OF PLASTIC ENGINEERS (SPE)

The Society of Plastic Engineers is a multidisciplinary organization that strives to increase interest in the area of plastics engineering, plastics scientists, and professional careers in the industry. As part of our mission, the SPE seeks to increase awareness of the importance of plastics engineering by inviting experts in the field to Baylor for symposium and organize industrial trips to companies using plastics. SPE will also organize extra-curricular education sessions with hands on training with industrial and characterization equipment not available in the standard undergraduate curriculum. As part of our mission statement we will also provide to Baylor students information about career opportunities in the field of plastics engineering.
Many of us work at Baylor because of the education and transformative college experience we received as undergraduate students at Baylor. Each of us recognizes the value of a Baylor education, and we are passionate about helping students find their places and achieve their goals.

At the School of Engineering and Computer Science (ECS), we stand by our mission to provide a superior education through instruction, scholarship, and service that prepares graduates for professional practice and responsible leadership with a Christian worldview.

By diversifying our programs’ offerings, expanding our faculty roster, and creating programs that support and foster student growth, we have been able to attract students of outstanding academic ability and produce graduates with sound technical training, leadership and entrepreneurship abilities, and a vision to positively impact the world around them.

Some of today’s brightest high school students can only fulfill their dreams of a Baylor education through scholarship support, and for that we ask for your help. Scholarships open up doors for some students that would otherwise be closed. For others, a scholarship allows them to focus more on their academics and participate in student organizations. Scholarships make a profound difference for our students.

There are many additional opportunities to support ECS, and your support is vital to the continued growth and success of our engineering and computer science programs. Your partnership will make a lasting impact in students’ lives.

Contact Jacob Singletary, Director of Development, to support a Baylor engineering or computer science student.